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A STUDY OF THE EFFECT OF SELECTED CHARACTERISTICS IN FARM MECHANICS RETRAINING SCHOOLS UNDER THE AREA REDEVELOPMENT ACT IN OKLAHOMA.

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DURING 1962-63, 16 FARM MECHANICS RETRAINING SCHOOLS WERE SET UP IN OKLAHOMA UNDER THE AREA REDEVELOPMENT ACT OF 1961 TO TRAIN 225 MEN WHO WERE EITHER UNEMPLOYED OR UNDEREMPLOYED. THIS STUDY WAS DESIGNED TO DETERMINE WHETHER THERE WAS ANY CORRELATION BETWEEN THE TEST SCORES AND SELECTED CHARACTERISTICS USED IN SELECTION OF THE TRAINEES AND THEIR SUCCESS IN GAINING EMPLOYMENT IN RELATED OCCUPATIONS. ALL APPLICANTS WERE REQUIRED TO TAKE THE GENERAL APTITUDE TEST BATTERY, FORM B-1002, WHICH MEASURES NINE APTITUDES, AND BE INTERVIEWED BY A REPRESENTATIVE OF THE LOCAL EMPLOYMENT OFFICE WHO CONSIDERED THREE OF THESE APTITUDES (GENERAL INTELLIGENCE, SPATIAL APTITUDE, AND FINGER DEXTERITY) PLUS ANY INTANGIBLE INFORMATION LEARNED FROM THE INTERVIEW FOR SELECTION PURPOSES. OF THE ENROLLEES CONTACTED, 174 FOUND EMPLOYMENT IN RELATED AND NONRELATED AREAS WHILE NINE DROPOUTS AND 19 WHO COMPLETED THE TRAINING WERE UNEMPLOYED. THE PLACEMENT RECORD INDICATED THAT THE SELECTION AND INSTRUCTION OF TRAINEES WAS SUCCESSFUL. THE ONLY SINGLE APTITUDE SCORE WHICH INDICATED SUCCESS WAS THE SPATIAL APTITUDE SCORE. THE COMBINATION CONSIDERED IN SELECTION WAS ALSO A GOOD INDICATOR. (PA)

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TABLE OF CONTENTS

Page

Introduction 1

Need for the Study 1

Purpose. 2

How the Study Was Conducted. 2

Definition of Terms. 3

Characteristics of Trainees in the Farm Mechanics ARA Program 6

Summary and Conclusions. 20

Bibliography 24

A STUDY OF THE EFFECT OF SELECTED CHARACTERISTICS IN FARM MECHANICS RETRAINING SCHOOLS UNDER THE AREA REDEVELOPMENT ACT IN OKLAHOMA

by Everett D. Edington and Robert H. Kuntz

The Area Redevelopment Act[1] of 1961 (Public Law 87-27, May 1, 1961) was passed by Congress to help certain areas of the country, which were suffering from substantial and persistent unemployment, to plan and finance their economic redevelopment. Part of this Act provided funds for the training of unemployed and underemployed residents of these areas. During the Spring of 1962, six Farm Mechanics training schools were held in Oklahoma under the Area Redevelopment Act, and ten Farm Mechanics training schools were completed under this Act in Oklahoma during the spring of 1963. There were 255 men who received training in these 16 schools.

Need for the Study

Since the Manpower Development and Training Act (Public Law 87-415, March 15, 1962, as amended by Public Law 88-214, December 13, 1963) continues with 100 per cent reimbursement until June 30, 1965, other training schools similar to the ones being studied are being held and planned in Oklahoma. Although some observations and studies of the training schools have already been made, it should be realized that the more thoroughly the schools and trainees are studied and analyzed, the chances will be greatly increased for other training schools in the future to be more successful.

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[1]Hereafter referred to as ARA

It is hoped that this study will be an aid in the selection of future trainees for Farm Mechanics retraining schools.

Purpose of the Study

The problem for which this study was designed was to determine whether there was any correlation between the test scores and selected characteristics used in selection of the trainees and their success in gaining employment in training related occupations.

In this study of Farm Mechanics training programs in Oklahoma, an attempt was made to determine whether there was any relationship among the differences of aptitude test scores and certain characteristics of the enrollees who: 1. received training and are now employed in a training related occupation; 2. dropped out and are now employed, but not in training related occupations; 3. completed the training and are now employed, but not in training related occupations; 4. dropped out and are now unemployed; 5. completed the training and are now unemployed.

How the Study Was Conducted

Subjects included in this study were trainees enrolled in Farm Mechanics retraining programs held in local Vocational Agriculture departments and supervised locally by the Vocational Agriculture Instructor under the directive of the State Supervisor, Division of Area Redevelopment Act Training, Oklahoma State Board for Vocational Education, under the provisions of the Area Redevelopment Act (Public Law 87-415, March 15, 1962). Trainees for these programs were screened and selected by the local office personnel of the Oklahoma Employment

Security Commission. Federal funds were supplied through the U. S. Department of Health, Education and Welfare to pay for the training.

Each of the courses held during the spring of 1962 had a duration of 16 weeks and trainees attended classes 20 hours per week. The courses which were completed during the spring of 1963 also had a duration of 16 weeks, but the trainees attended classes 28 hours per week. During the course of the programs, each trainee received an amount of money equivalent to the maximum amount available to him as umemployment compensation, which was approximately $27 per week. In addition, each was permitted to earn as much as $13.50 per week in outside, part-time employment. If he earned more than $13.50, the surplus would be deducted from his $27 compensation.

Definition of Terms

A variety of aptitude test scores and personal characteristic traits of the trainees were considered in this study.

The Oklahoma Employment Security Commission gave all the enrollees the General Aptitude Test Battery, Form B-1002 (GATB), which was developed for use in the occupational counseling program of the United States Employment Service and includes measures for nine different aptitudes. For purposes of this study all nine of the aptitudes were used. In addition, the intelligence, spatial aptitude, and finger dexterity aptitudes were considered collectively because those are the three that the Employment Security Commission considered in selecting enrollees. The following are the definitions of the nine aptitudes measured by the GATB, B-1002:

a. Intelligence--General learning ability. The ability to "catch on" or understand instructions and underlying principles; the ability to reason and make judgments. Closely related to doing well in school.

b. Verbal Aptitude--The ability to understand the meaning of words and to use them effectively. The ability to comprehend language, to understand meanings of whole sentences and paragraphs.

c. Numerical Aptitude--The ability to perform arithmetic operations quickly and accurately.

d. Spatial Aptitude--The ability to think visually of geometric forms and to comprehend the two-dimensional representation of three-dimensional objects. The ability to recognize the relationships resulting from the movement of objects in space.

e. Form Perception--The ability to perceive pertinent detail in objects or in pictorial or graphic material. Ability to make visual comparisons and discriminations and see slight differences in shapes and shadings of figures and widths and lengths of lines.

f. Clerical Perception--The ability to perceive pertinent detail in verbal or tabular material. Ability to observe differences in copy, to proof-read words and numbers and to avoid perceptual

errors in arithmetic computation.

g. Motor Co-ordination--The ability to co-ordinate eyes and hands or fingers rapidly and accurately in making precise movements with speed. Ability to make a movement response accurately and swiftly.

h. Finger Dexterity--The ability to move the fingers and manipulate small objects with the fingers, rapidly or accurately.

i. Manual Dexterity--The ability to move the hands easily and skillfully. Ability to work with the hands in placing and turning motions.[2]

At the end of each training course completed in 1963, the State Board for Vocational Education required each local instructor to complete an "Individual Trainee Termination of Training" form on each trainee.[3] On this form, each instructor was required to rate each trainee according to eight different personal traits. The traits are: industry and energy, relations with others, emotional stability, leadership, appearance, ability to learn, dependability, and punctuality.

In order to determine what each enrollee was doing at the time of this study, each training center was visited sometime between August 1, 1963, and November 1, 1963. Each of the enrollees who could be located were asked their employment status, what kind of work, if employed,

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[2]United States Employment Service, Guide to the Use of the General Aptitude Test Battery, B-1002 (Oklahoma State Employment Service, Oklahoma City) p. 1.

[3]U. S. Government Printing Office: 1963 of--670541, "Individual Trainee Termination of Training," DL/DHEW-MT-102, Budget Bureau No. 44-R1204, Expires September 30, 1963.

their last regular salary before training, and their salary now. The local Vocational Agriculture Instructor was also used as a resource person in determining the employment status of enrollees. Questionnaires were mailed to the remaining enrollees asking for this information. Information was obtained from 84 per cent of the trainees.

The Individual Trainees Termination of Training form used in 1963 was not available in 1962. In lieu of this form, the local instructors of these schools were contacted and asked to rate the enrollees in order to have a complete set of data.

Other information obtained from the Individual Trainee Termination of Training form was: 1. the amount of training that each enrollee received; 2. if he dropped out and the reason for dropping out. For the six courses which did not have this form, the information was acquired from the local supervisor.

Characteristics of Trainees in the Farm Mechanics ARA Program

Findings presented in this section of the report are based upon an examination of the relationship between a variety of independent variables and trainee success in obtaining a training related job. Independent variables included in this phase of the study include the nine aptitudes measured by the General Aptitude Test Battery, B-1002, the sum of the three aptitudes which the Oklahoma Employment Security Commission considered in selecting trainees, and age. The nine individual aptitudes are: intelligence, verbal aptitude, numerical aptitude, spatial aptitude, form perception, clerical perception, motor co-ordination, finger dexterity, and manual dexterity. The three aptitudes considered together were intelligence, spatial aptitude,

and finger dexterity.

The number of persons enrolling in the ARA Farm Mechanics training programs can be found in Table I. The original enrollment of each school which was completed in 1962 was 14, and 15 for each school which was completed in 1963. The reason why some of the schools have a larger number of persons enrolling than the original number is because those enrollees who dropped out during the first two weeks are replaced. It may also be noted in Table I that three of the centers, Holdenville, Panama, and Stilwell, each held two training schools.

Table II includes results indicating relationships between success or lack of success in obtaining training related employment and ten different independent variables (intelligence, verbal aptitude, numerical aptitude, spatial aptitude, form perception, clerical perception, motor co-ordination, finger dexterity, manual dexterity) and the sum of these three aptitudes: intelligence, spatial aptitude and finger dexterity. These are the measures that the Employment Security Commission considered in selecting trainees. It may be observed in Table II that only two of the independent variables (spatial aptitude and the sum of the three--intelligence, spatial aptitude, and finger dexterity) are significantly different at the five per cent level.

The fourth group of enrollees (those dropouts who are unemployed) had too small a number of persons in it to statistically analyze. In analyzing the spatial aptitude scores, those persons who are employed in training related occupations do show significantly higher scores than those who are less successful in obtaining employment in training related jobs. The sum of the three scores (intelligence, spatial aptitude, and finger dexterity) is very similar to the scores on spatial

aptitude, in that those who received training and have a training related job had the highest scores.

TABLE I

THE NUMBER OF PERSONS ENROLLING IN TRAINING PROGRAMS, BY CENTER LOCATION, AND YEAR TRAINING COMPLETED

Center	Number of Persons Enrolling 1962	1963
Boswell		15
Broken Bow		15
Chickasha		15
Holdenville	20	18
Quapaw	17	
Panama	17	17
Poteau	14	
Sallisaw		15
Soper		15
Stigler		15
Stilwell	14	15
Tahlequah	16	
Tuttle		17
Total	98	157

TABLE II

THE GENERAL APTITUDE TEST BATTERY SCORES OF EACH GROUP OF ENROLLEES

	Employed, Training Related n=135	Dropout, Employed, Non-training Related n=23	Employed, Non-training Related n=28	Completed Training, Unemployed n=19	Average n=215	F-Value
Intelligence	95.79	91.30	89.14	91 ~~19~~.74	94.03	1.768
Verbal Aptitude	91.70	91.09	87.54	87.42	90.67	.705
Numerical Aptitude	90.00	85.74	89.75	88.58	89.24	.508
Spatial Aptitude	99.40	94.39	90.82	93.79	97.55	2.277*
Form Perception	90.46	90.13	88.79	96.05	91.02	.791
Clerical Perception	91.70	90.91	93.54	90.37	92.04	.719
Motor Co-ordination	93.56	87.35	91.04	93.79	92.68	.784
Finger Dexterity	95.97	94.35	90.29	90.32	94.61	1.122
Sum of Intelligence, Spatial Aptitude, & Finger Dexterity	291.16	280.04	270.25	275.84	286.19	2.623*
Manual Dexterity	97.31	91.74	94.57	96.89	96.58	.775

*Significant at 5 per cent level

The other eight independent variables (intelligence, verbal aptitude, numerical aptitude, form perception, clerical perception, motor co-ordination, finger dexterity, and manual dexterity) as measured by the GATB test, showed no significant difference for the different groups of enrollees. An interesting fact which may be determined from Table II is that 61 per cent of the enrollees contacted are employed in training related jobs and 26 per cent more of the men are otherwise employed.

Results indicating relationships between success in obtaining employment in training related occupations and age are included in Table III. It may be noted that the trainees who were successful in finding a training related job average slightly older than those who were not successful, but the difference in age is not enough to be a determining factor in the success of the individual. The trainees in all five groups ranged from 17 to 18 years of age to 62 years of age. Consequently, the age of the enrollee was of little or no value in selecting trainees.

TABLE III

AGES OF EACH GROUP OF ENROLLEES

	Employed, Training Related	Dropout, Employed, Non-related	Completed Training Employed, Non-related	Dropout, Un-employed	Completed Training, Un-employed	Total Average	F-Value
Average Age	31.5	28.2	28.9	27.0	28.9	30.4	.811
No. in Each Group	135	23	28	10	19	215	

In order to further determine other benefits which the trainees might have received from the training, other than a salable skill, each enrollee who was employed was asked what his present salary was and what his last regular salary was before the training.

The percentages of each group who had an increase and no increase is in Table IV. It should be mentioned here that at the time of enrollment all of these trainees were either unemployed or underemployed, which may be called part-time employment.

In each of the three groups of enrollees who were employed, the majority had obtained employment with an increase in salary over their last regualr salary. If the three employed groups are considered collectively, it will be noted that 71 per cent of the enrollees who got any kind of job received a raise over their last regular salary before receiving the training.

TABLE IV

SALARY AFTER TRAINING AS COMPARED TO LAST REGULAR SALRY BEFORE TRAINING

Groups	Increase in Salary	No Increase in Salary	Total Per cent	Total No. in Each Group
Employed, Training Related	60	40	100	125
Dropouts, Employed, Non-training Related	70	30	100	20
Completed Training, Employed, Non-training Related	84	16	100	25
All Who Were Employed	65	35	100	170

In Table V is found the percentages of enrollees who were married, single, divorced or widowed at the time of enrollment in each group of enrollees being studied, and the total number located in each group of trainees. The indication seems to be that the majority of men who are unemployed are either single or divorced.

TABLE V

MARITAL STATUS OF EACH GROUP OF ENROLLEES

Groups	Married	Single	Divorced	Widower	Total Per cent	Total Number in Group
Employed, Training Related	67	26	6	1	100	125
Dropouts, Employed, Non-training Related	61	35	4		100	23
Completed Training, Employed, Non-training Related	53	36	11		100	28
Dropouts, Unemployed	45	33	22		100	9
Completed Training, Unemployed	26	69	5		100	19

The data in Table VI indicate that nearly all of the enrollees were school dropouts. It would seem that those trainees who are now employed in training related occupations, even though they had fewer years of education, realized the need for learning a salable skill. The number of years of education ranged from four years to 15 years. It should be noted that none of the unemployed enrollees had any education beyond high school.

TABLE VI

AVERAGE YEARS OF EDUCATION OF EACH GROUP OF ENROLLEES

Groups	Average Years of Education	No..in Each Group
Employed, Training Related	9	135
Dropouts, Employed, Non-training Related	10	23
Completed Training Employed, Non-training Related	10	28
Dropouts, Unemployed	10.5	10
Completed Training Unemployed	10.5	19

Instructor Ratings Given to Trainees

The ratings given by the local course instructors on the following personal traits of the trainees are found in Tables VII through XIV: (1) industry, energy (2) relations with others (3) emotional stability (4) leadership (5) appearance (6) ability to learn (7) dependability (8) punctuality. The ratings are given in percentages and the total number in each group is also shown.

TABLE VII

INDUSTRY AND ENERGY RATINGS OF EACH GROUP OF ENROLLEES

Groups	Usually Indifferent	Sometimes Lazy	Average in Industriousness	Hardworker, Willing To Do More Than Assigned	Exceptionally Diligent, Eager To do More Than Assigned	Total %	Total No.
Employed, Training Related	1	9	43	35	12	100	130
Dropouts, Employed, Non-training Related	12	19	38	19	12	100	16
Completed Training Employed, Non-training Related		21	36	36	7	100	28
Dropouts, Unemployed		22	67	11		100	9
Completed Training, Unemployed	10	21	48	21		100	19

Industry and energy (which is willingness and desire to work at school duties) is shown in Table VII. There is very little difference in the ratings of the five groups except that not one of the men in the two unemployed groups was rated as being exceptionally diligent and eager to do more than was assigned.

TABLE VIII

RELATIONS WITH OTHERS RATINGS OF EACH GROUP OF ENROLLEES

Groups	Surly, Troublesome, Indifferent	Sometimes Difficult to Work With	Usually Tactful and Obliging, Self-control	Always Congenial Cooperative	Highly Cooperative, Inspires Cooperation	Total %	Total No.
Employed, Training Related	1	10	28	49	12	100	130
Dropouts, Employed, Non-training Related	6	25	50	13	6	100	16
Completed Training, Employed, Non-training Related		10	36	50	4	100	28
Dropouts, Unemployed		22	33	45		100	9
Completed Training, Unemployed	5	32	37	26		100	19

The ratings in Table VIII are concerned with relations with others. Relations with others is interpreted as being helpful and cooperative with associates and superiors in manner and act. Again, there seems to be no difference in the ratings of the majority of men in each group, except that no men among the unemployed groups are rated the highest--highly cooperative.

TABLE IX

EMOTIONAL STABILITY RATINGS OF EACH GROUP OF ENROLLEES

Groups	Loses His Head Easily	Apathetic, Unresponsive	Usually Well Controlled	Balance of Responsiveness and Control	Notable and Unusual Control of Emotions	Total %	Total No.
Employed Training Related	1	3	41	44	11	100	130
Dropouts, Employed, Non-training Related	13	6	62	13	6	100	16
Completed Training Employed, Non-training Related	4		61	28	7	100	28
Dropouts, Unemployed		22	56	22		100	9
Completed Training, Unemployed	16		68	11	5	100	19

The ratings on emotional stability or ability to control emotions are found in Table IX. Judging from this table, it seems that only a small percentage of all five groups had emotional problems. There is not enough difference among the groups to consider this a factor between success and failure.

TABLE X

LEADERSHIP RATINGS OF EACH GROUP OF ENROLLEES

Groups	Unable to Lead	Not Usually a Leader	Sometimes Displays Leader-ship	Leads Well Under Most Circum-stances	Displays Marked Ability To Make Things Go	Total %	Total No.
Employed, Training Related	3	25	36	23	13	100	130
Dropouts, Employed, Non-training Related	13	44	31	6	6	100	16
Completed Training, Employed, Non-training Related	7	43	32	11	7	100	28
Dropouts, Unemployed	11	33	56			100	9
Completed Training, Unemployed	16	37	37	5	5	100	19

The ratings on leadership are found in Table X. Leadership is defined as the ability to get others to cooperate. The groups of trainees who are now employed in training related occupations show a difference in leadership ability. Thirty-six per cent of this group are rated in the two upper classifications, while the group that completed the training and is now employed but not in training related occupations is only one-half of that figure.

TABLE XI

APPEARANCE RATINGS OF EACH GROUP OF ENROLLEES

Groups	Untidy, Carelessly Dressed	Clean but Careless of Appearance & Grooming	Average in Grooming and Dress	Neat Dress, Well Groomed	Outstanding in Taste and Care	Total %	Total No.
Employed, Training Related	2	8	52	35	3	100	130
Dropouts, Employed, Non-training Related	6	69	19		6	100	16
Completed Training, Employed, Non-training related	32	50	14		4	100	28
Dropouts, Unemployed	44	56				100	9
Completed Training Unemployed	26	42	32			100	19

Such factors as cleanliness of clothing and person, including care of hair, teeth and fingernails, are included in the appearance ratings in Table XI. The one group that seems to be different is those dropouts who are unemployed. The majority of them have a lower rating than the other four groups of trainees.

TABLE XII

ABILITY TO LEARN RATINGS OF EACH GROUP OF ENROLLEES

Groups	Unable to Learn	Learns Slowly	Average Rate of Adaptation	Above Average in Capacity	Outstanding in Mental Ability and Alertness	Total %	Total No.
Employed, Training Related		8	54	33	5	100	130
Dropouts, Employed, Non-training Related	6	19	50	19	6	100	16
Completed Training, Employed, Non-training Related		32	50	14	4	100	28
Dropouts, Unemployed		22	67	11		100	9
Completed Training, Unemployed	32	47	16	5		100	19

In rating the trainees on ability to learn in Table XII, the following was considered: (1 ease in learning new methods, (2 adapting to new situations and tasks. The difference between groups seems to be greater for this one personal trait than any of the other seven. The majority of the trainees who are employed in training related jobs are rated as average or above average. The dropouts who are employed, but not in training related jobs are rated similar. The other three groups seem to be lower in ability to learn, especially those that completed the training and are unemployed, of which the majority are rated in the two lowest classifications, unable to learn and learns slowly.

TABLE XIII

DEPENDABILITY RATINGS OF EACH GROUP OF ENROLLEES

Groups	Needs Constant Watching	Sometimes Un-reliable	Responsible But Needs Direc-tions	Very Dependable, Needs No Discipline	Thoroughly Depend-able Trust-worthy	Total %	Total No.
Employed, Training Related	2	8	38	41	11	100	130
Dropouts, Employed, Non-training Related	12	25	38	19	6	100	16
Completed Training, Employed, Non-training Related	4	4	53	32	7	100	28
Dropouts, Unemployed	11	11	67	11		100	9
Completed Training, Unemployed	21	10	53	16		100	19

The dependability ratings are contained in Table XIII. This is a rating of whether the trainee faithfully carries out assignments and bears his full share of responsibility. There is very little or no difference between the five groups in the dependability ratings. However, it should be noted that no one in the two unemployed groups was given the highest rating of thoroughly dependable and trustworthy.

Summary and Conclusions

During the years 1962 and 1963 sixteen farm mechanics retraining schools were held in 13 centers in Oklahoma under the Area Redevelopment

Act of 1961 for 255 unemployed or underemployed men. The oklahoma Employment Security Commission had the responsibility of selecting trainees for these courses. The State Board for Vocational Education had the responsibility for developing the course of instruction and providing facilities and instruction.

The purpose of this study was to determine the success of the training and an evaluation of the selection methods used.

All applicants for these courses were required to take the General Aptitude Test Battery and be interviewed personally by a representative of the local employment office. The representative from the local employment office considered three of the nine aptitudes tested by the GATB test in selecting trainees plus any intangible information he might have learned from the personal interview. The three aptitudes considered were general intelligence, spatial aptitude, and finger dexterity.

The trainees were divided into five groups: (1 those who received training and are employed in training related occupations, (2 dropouts who are now employed but not in training related occupations, (3 those who completed the training and are now employed but not in training related occupations, (4 dropouts who are now unemployed, (5 those who completed training but are now unemployed.

According to the analysis made in this study, the only single aptitude score from the GATB tests which indicate success for the trainees is the spatial aptitude score. However, the combination of the three scores which the employment office representative considered in selecting the trainees are also good indicators of success in this field. These are general intelligence, spatial aptitude, and finger dexterity.

Eighty-seven per cent of the enrollees contacted are now employed at some job while 61 per cent are employed in training related occupations. That placement record alone indicates that the selection and instruction of trainees was successful. A majority of the trainees who got a job after taking the training got a pay raise over their last regular salary before training.

The majority of the employed men are married while the majority of the unemployed men are single. This is an indication that the married men made better use of the training than the unmarried. Another important consideration is that nearly all of these trainees were high school dropouts and as a result were unemployed. The training was beneficial to them in gaining employment.

There is only one personal trait among the eight different personal traits as rated by the local instructor which seems to be indicative of the success of the trainees in acquiring employment. That one trait is ability to learn. Two other ratings which appear somewhat indicative but not as much as ability to learn are leadership and appearance.

With the criteria used, the task of selecting trainees for these training courses in Farm Mechanics was performed adequately. Since the best single independent variable to be considered in selecting trainees was spatial aptitude, it should be given more weight in selecting future trainees.

This study was not especially designed to evaluate the quality of instruction in the training schools; but, because of the percentage of placement in training related jobs, it may be concluded that the instruction was adequate.

Programs of this type are beneficial in reducing unemployment and further study should be made to determine other occupations where skilled personnel are needed.

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